

CLAIMS

We claim:

1. Method of making golf ball cores including the steps of:
 - forming at least one preform;
 - measuring each preform;
 - using the measurements to determine a measured volume of each preform;
 - comparing the measured volume of each preform to a predetermined standard preform volume;
 - advancing each preform to a spherical cavity if the measured volume is substantially equal to the predetermined standard preform volume.
2. The method of claim 1, further including providing at least one pair of half-molds to form the spherical cavity; and after the step of advancing each preform closing each pair of half-molds such that the half-molds move with respect to one another into alignment about each preform
3. The method of claim 1, wherein during the step of closing the half-molds the molds move along a first closing direction and move along a second direction angularly offset from the first direction.
4. The method of claim 1, wherein the second direction is transverse to the first direction.
5. Method of processing preforms for making golf ball cores including the steps of:
 - forming at least one preform;
 - measuring each preform; and
 - using the measurements to determine a measured volume of each preform.

6. The method of claim 5, wherein the step of forming at least one preform further includes extruding a material through a die to form an extrudate and cutting the extrudate to form preform.
7. The method of claim 6, wherein the step of extruding further includes continuously extruding the material.
8. The method of claim 5, wherein the step of measuring each preform further includes using at least one laser micrometer to measure each preform.
9. The method of claim 5, wherein the step of measuring each preform further includes providing at least one camera and taking at least one image of each preform with the camera.
10. The method of claim 5, wherein the step of measuring each preform further includes measuring the length of each preform and measuring the diameter of each preform.
11. The method of claim 9, wherein the step of measuring each preform further includes determining an area pixel count and a diameter pixel count from each image and using the counts to determined the measured volume of the preform.
12. The method of claim 5, further including comparing the measured volume of the preform to a predetermined standard preform volume.
13. The method of claim 12, further including advancing each preform to a mold if the measured volume is substantially equal to the predetermined standard preform volume.
14. The method of claim 12, further including providing a visual cue if the measured volume is substantially unequal to the predetermined standard preform volume.
15. The method of claim 12, further including providing an audible cue if the measured volume is substantially unequal to the predetermined standard preform volume.

16. The method of claim 12, further including directing each preform away from a mold if the measured volume is substantially unequal to the predetermined standard preform volume.

17. The method of claim 12, further including modifying a rate of cutting if the measured volume is substantially unequal to the predetermined standard preform volume until the measured volume is substantially equal to the predetermined standard preform volume.

18. The method of claim 17, wherein the step of modifying the rate of cutting is automatic.

19. An apparatus for processing preforms for use in making golf ball cores comprising:
die for shaping a core composition;
an extruder for forcing the core composition through the die to form an extrudate;
a cutting device for cutting the extrudate into preforms;
a non-contact measuring device for measuring at least two dimensions of each preform to determine a volume of each preform.

20. The apparatus of claim 19, wherein the non-contact measuring device includes a camera.

21. The apparatus of claim 20, further including a sensor for triggering the camera to take an image of each preform.

22. The apparatus of claim 19, wherein the non-contact measuring device includes a laser.

23. The apparatus of claim 19, further including a motor controller for controlling the cutting device and the motor controller receives signals from the camera related to the volume of each preform.

24. A mold for making a golf ball core comprising:
an upper frame member and a lower frame member, each frame member having at least one cavity; and
at least one pair of upper and lower half-molds positioned in the cavities of the upper and lower frame members respectively, each half-mold having a surface portion,
wherein the cavities and half-molds are configured and dimensioned to allow the half-molds to move transversely with respect to the upper and lower frame members such that when the surface portions of the upper and lower half-molds contact the upper and lower half-molds move into alignment.
24. The mold of claim 24, wherein the edges of the half-molds include a first portion and a second portion angularly offset from the first portion, wherein when the second portions of each half-mold contact the upper and lower half-molds move into alignment.
25. The mold of claim 24, wherein each half-mold includes a truncated spherical cavity and the first portion includes a groove spaced from the truncated spherical cavity.
26. The mold of claim 24, wherein the second portion is angularly offset from the first portion by about 105° to about 145°.
27. The mold of claim 24, wherein the second portion is angularly offset from the first portion by about 120°.
28. The mold of claim 24, further including an upper plate and a lower plate adjacent the upper and lower frame members respectively, each upper plate and lower plate further includes a stepped bore with a narrow portion and an enlarged portion and each half-mold further includes an extension and a retainer member, the extension extends through the narrow portion of the bore and the retainer member is located in the enlarged portion of the bore.
29. The mold of claim 24, further including an ejection apparatus with an ejection pin.

30. The mold of claim 24, further including a plurality of cavities in the upper and lower members and a plurality pairs of half-molds located therein.

FIG. 4 is a perspective view of the mold assembly of FIG. 1, showing the upper and lower members and the plurality of cavities and half-molds.